Future Decision Centre (FDC)

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1.0 PROBLEM/PURPOSE

The Future Decision Centre (FDC) enables Display of Several Databases (fused together) in a 3-D Map System, in such a way that the information is intuitively understandable for Decision markers from both Military Commands & Civilian Crisis Management Institutions/Organisations.

Today there is a Challenge for Decision Makers on Strategic & Operational Levels to get a sufficient grasp of the situation (awareness) at the Level. At the same time the Strategic and/or Operational Level sometimes has a need to engage (or to be kept Updated) directly on Tactical Scenarios/Operations. The FDC enables this kind of "Scenarios Diving", without loosing Track of the overall picture.

The overwhelming amount of Information on all Levels creates a Demand of Fuse Databases into one Recognized picture, which at all times is directly relevant to the Scenario the audience is observing. The FDC aims at creating such a Picture, and is able to present it on a "FDC Table". Also there is a Challenge to improve the Land Picture, and it is clearly unbalanced when it is compared to Sea/Air Picture. The FDC does not directly improve this unbalance, but indirectly contribute to improve this Picture, as it intends to fuse different scenarios into one COP.

2.0 TECHNOLOGY

The FDC Prototype(s), as it is currently built at NOBLE, has Verified Integrated (fused) Display of UAV Live Scenarios, Recognized Air Picture (RAP) from Multi AEGIS Site Emulator (MASE), Sea Picture & Meteorological Information Layered on a 3-D Map Display System. The Frameless Display Table consists of Highly Modified LCD Panels, designed for use in Multi Screen Solutions. For the 25 Segment Table currently used the Resolution is extremely High, typically 40 – 50 million Pixels.

The FDC Software is able to Fuse Information from Several Databases, and Display it layered onto a sophisticated 3-D Map. There are still challenges in the field of Sensor Fusion and integration of Sensors, either Directly from Live Sensor, or Indirectly from other Databases. The FDC has immense potential for Development in order to tailor the Display exactly to the use of the relevant Decision makers.

3.0 SUPPORT OF JOINT/COMBINED OPERATIONS

The FDC is directly Relevant as a Decision Centre for Joint and/or Combined Operations. The information from Different Platforms or Databases can be tailored to fit the specific Scenarios or Operations carried out. It will also be possible, due to the integrated nature of the FDC Database, to quickly change the Display from Air to Sea to Land Pictures, and decide what kind of installations or objects (ex Oil Platforms, Building, Pipelines, SAM Sites etc.) you would like to be present at the picture you are looking at.

Paper presented at the RTO IST Workshop on "Massive Military Data Fusion and Visualisation: Users Talk with Developers", held in Halden, Norway, 10-13 September 2002, and published in RTO-MP-105.

Report Documentation Page

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The FDC will be able to Display pictures (Strategic, Operational and Tactical) to for example Joint Operation Commanders & Crisis Management Leaders.

4.0 FUTURE/PAST DEMONSTRATIONS

The Prototype(s) FDC has already been tested at different Operations & Scenarios, and the outcome has been very positive. The Testing has (and will) generated/uncovered need for different kind of information and other types of use – it is in constant development.

The following exercises can be mentioned:

- Pre – TACEVAL at Rygge Main Air Station (MAS), Norway. Mainly the FDC Table was used to Display Key Personnel (GPS Indicated) and Unexploded Objects (UXO) inside the Air Station Field.
- Joint – Winter (NATO) Exercise in CAOC-3 at Reitan, Norway. A Single-Screen Display was demonstrated in order to Display Live UAV Sensor Information, for the purpose of Tasking Air Strikes in a Time Critical Targeting Scenario.
- Currently the FDC Table is utilized at F-16 Squadron Level in Manas, Kyrgyzstan, in order to Pre- and De-Brief Pilots on the Portable Flight Planning System (PFPS). The FDC has been loaded with relevant (1:50.000 Russian Maps) Map Information from the Operational Area.

Other Scenarios and Exercises are awaiting use of the present Prototype, and this will constantly generate a basis for future experimenting and development towards our vision.

5.0 COST & TIME SCHEDULE

Currently Norway has invested about 1.2 Million USD in the Development of the Prototype(s). The FDC Table Display Technology is now mature, verified and able to perform the necessary workload. Further investment will mainly be concentrated on the Sensor Fusion & Database development of the FDC.

The funding has been provided to NOBLE through the CHOD Norway Joint Staff. The Procurement of Display Tables itself will mainly be funded directly by the User in each case, but development umbrella, will probably mainly be funded through NOBLE.

6.0 RISK ASSESSMENT

The Risk related to the Display Technology is now Low – Medium. This Technology has been verified, and Prototypes exists at several sites. The challenge is development and integration of sufficient Database Capacity & Processor Power in order to perform the necessary layering of relevant information onto the 3-D Display. The Risk related to this Sensor Fusion part is mainly to get hold of sufficient Personnel/Expert Resources, and probably not highly connected to the Technology itself. Our present contractor has outlined a “Way Ahead” that seems feasible, but is currently not able to keep the Required Tempo due scarce Resources.

7.0 LEAD SERVICE/SPONSOR

Currently Norway is utilizing the FDC Table for different purpose at the Squadron Level in the Air Force, and at the Air Force Base Level.

We foresee a Great potential for Joint Operations and a very interesting use for Homeland Defence/ Management or Crisis Management of Military/Civilian Mix Scenarios, and even at the Political Level.

The FDC will probably best be utilized on Strategic & Operational Levels, in Joint or Complicated Scenarios, but will also be able to Display Tactical Information to the Strategic Level if Requested. A PC Linked Version (which has also been tested) can provide relevant information to Tactical Groups/Teams (Special Ops etc.).

8.0 POINT OF CONTACTS (POC)

Norwegian Battle Lab & Experimentation (NOBLE).

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SYMPOSIA DISCUSSION – KEYNOTE ADDRESS 1

Author's Name: Col. Tom Johansen, NOBLE, Norway

Question:
What testing methods are used in the rapid prototyping projects before sending a tool, like the table demonstrated, to the field?

Answer:
The testing process in this development cycle is informal. In this situation, there is immediate need for the tools being developed, and it is preferable to have the additional information from the very new display rather than trying to make decisions with just paper maps. It is not a weapon, just a tool, so the risk is relatively low.

Question:
Because of the technology available, a politician or general can see what is going on at the tactical level. How does this affect operations?

Answer:
Speaking from experience, there are instances where a person who was higher up in the chain of command saw pictures that he wanted acted on immediately. All decision makers should have the ability to see what is going on in real time, and each should know his/her role and when it is appropriate to insert themselves into the decision making process.

NOBLE CONSEPT
-A small state battlelab

Colonel Tom Johansen

DEFENCE CHIEFS COMMISSION

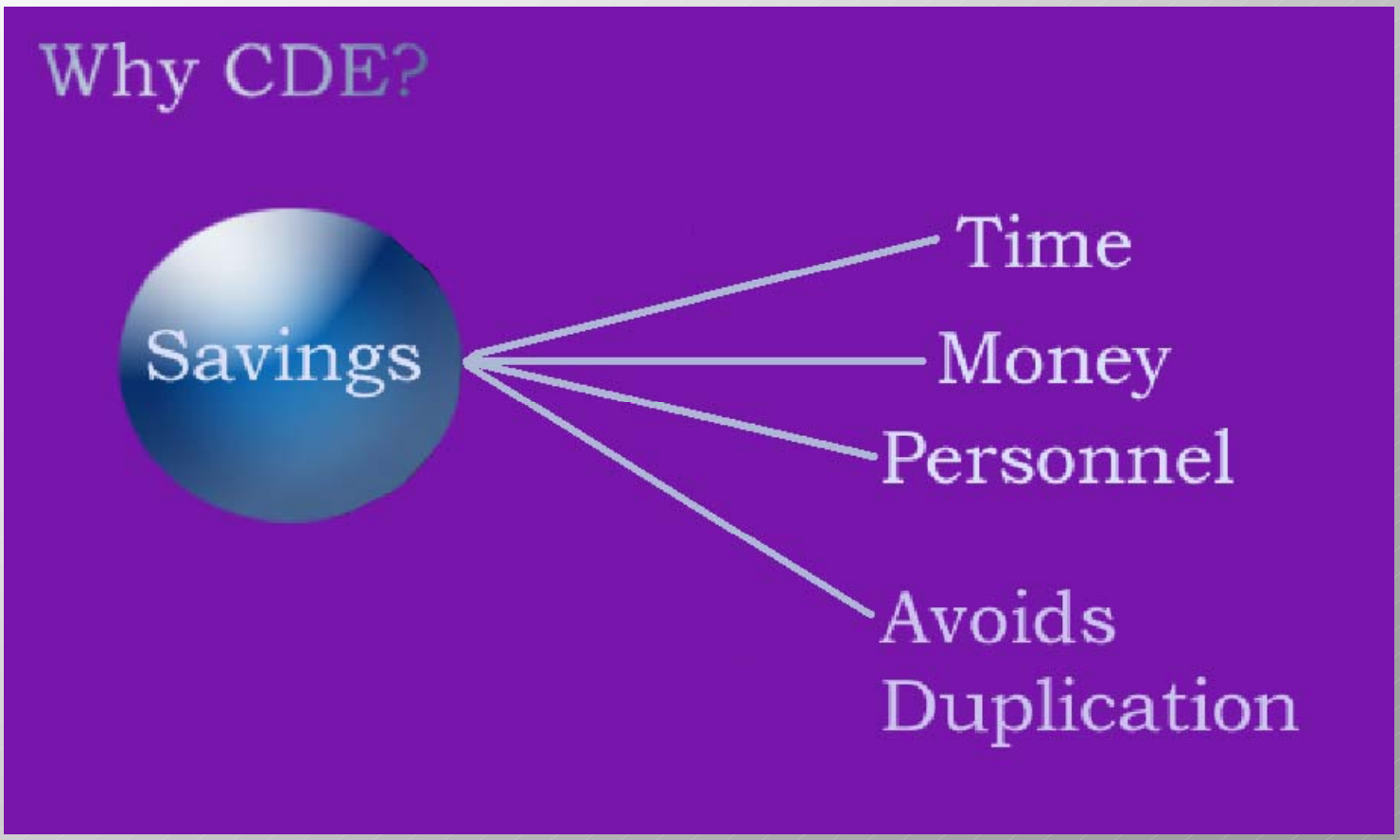
NATIONALLY:

- NETWORK-CENTRIC WARFARE
- PRESISION GUIDED WEAPONS
- COMMON OPERATIONAL FOCUS

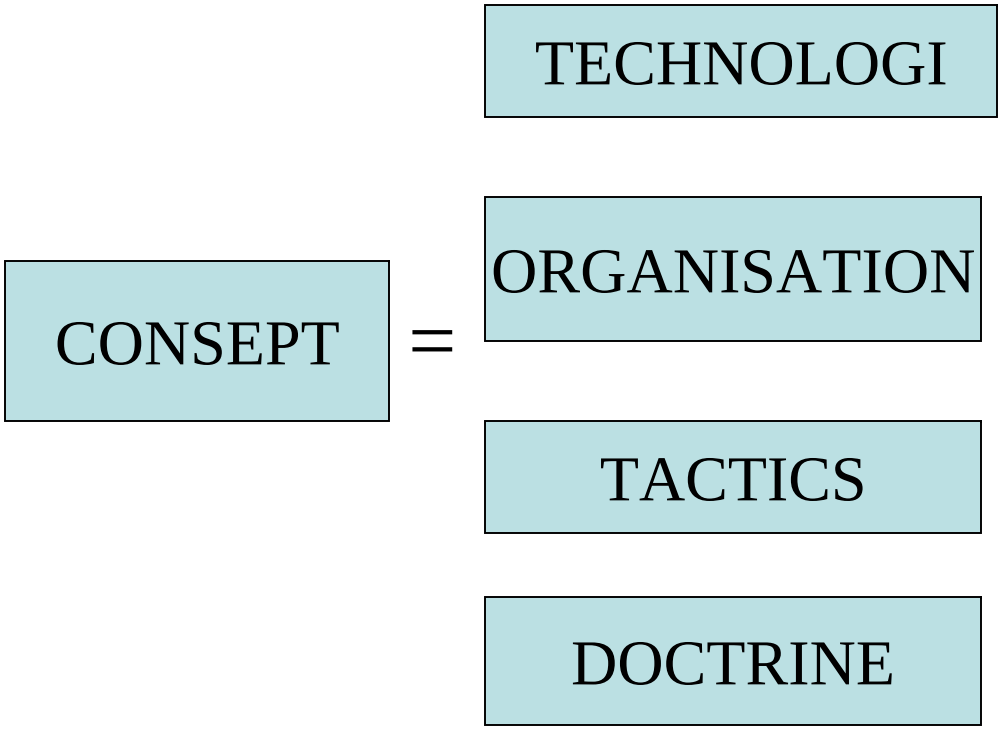
NATO:

- PARTICIPATING IN NATO CDE PROGRAM (SACLANT)

PURPOSE OF CDE



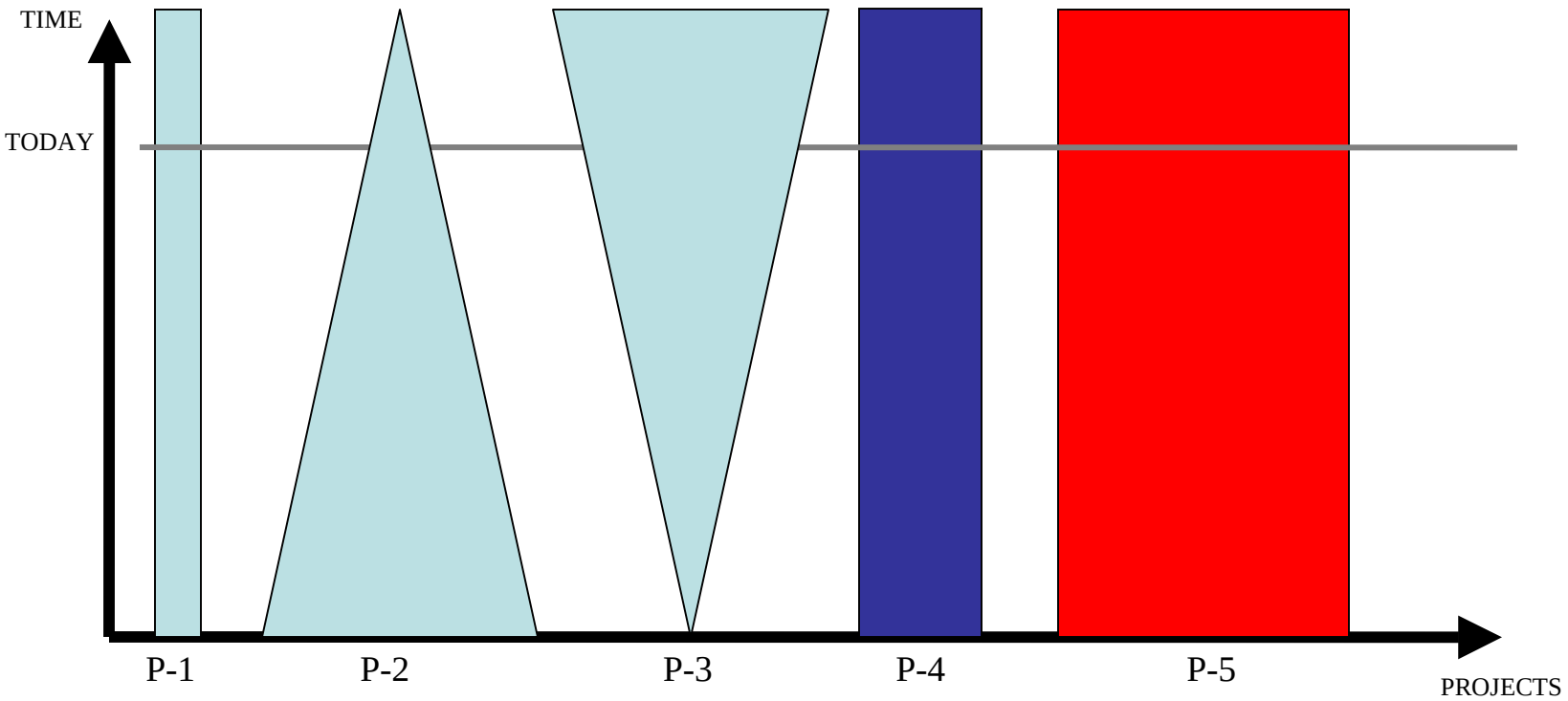
CDE WISHES NEW CONSEPTS



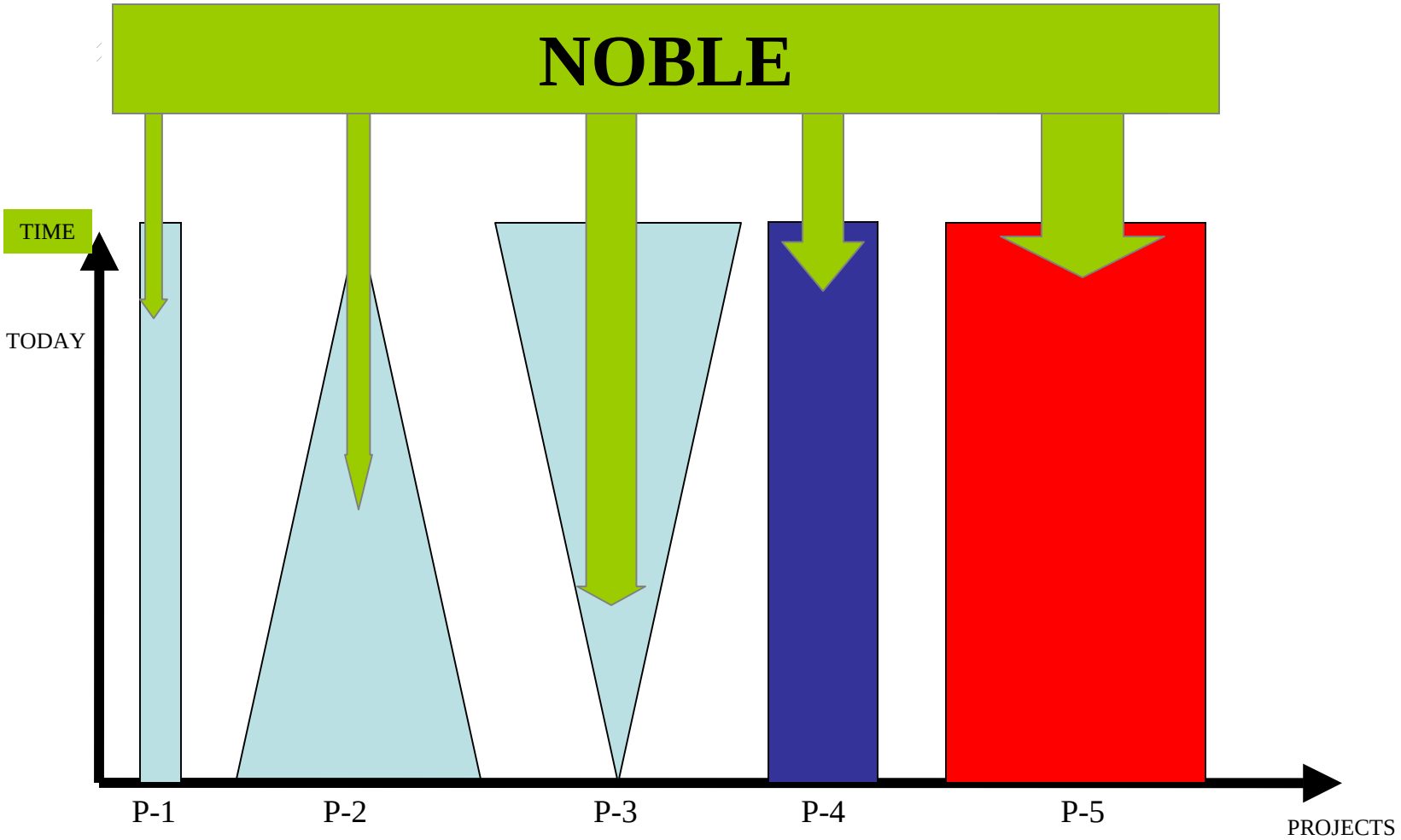
Development of consepts merge different working environments.

Profits are made when all variables can be changed.

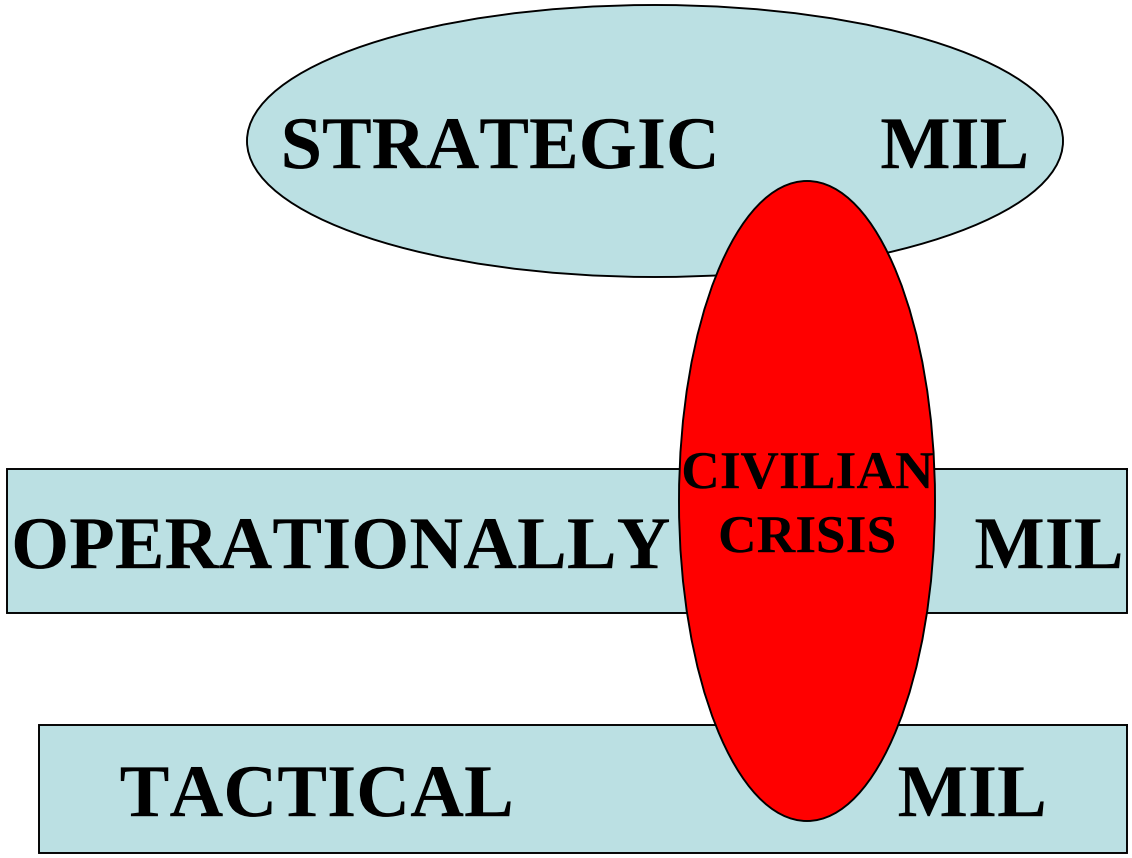
NOBLE'S PART



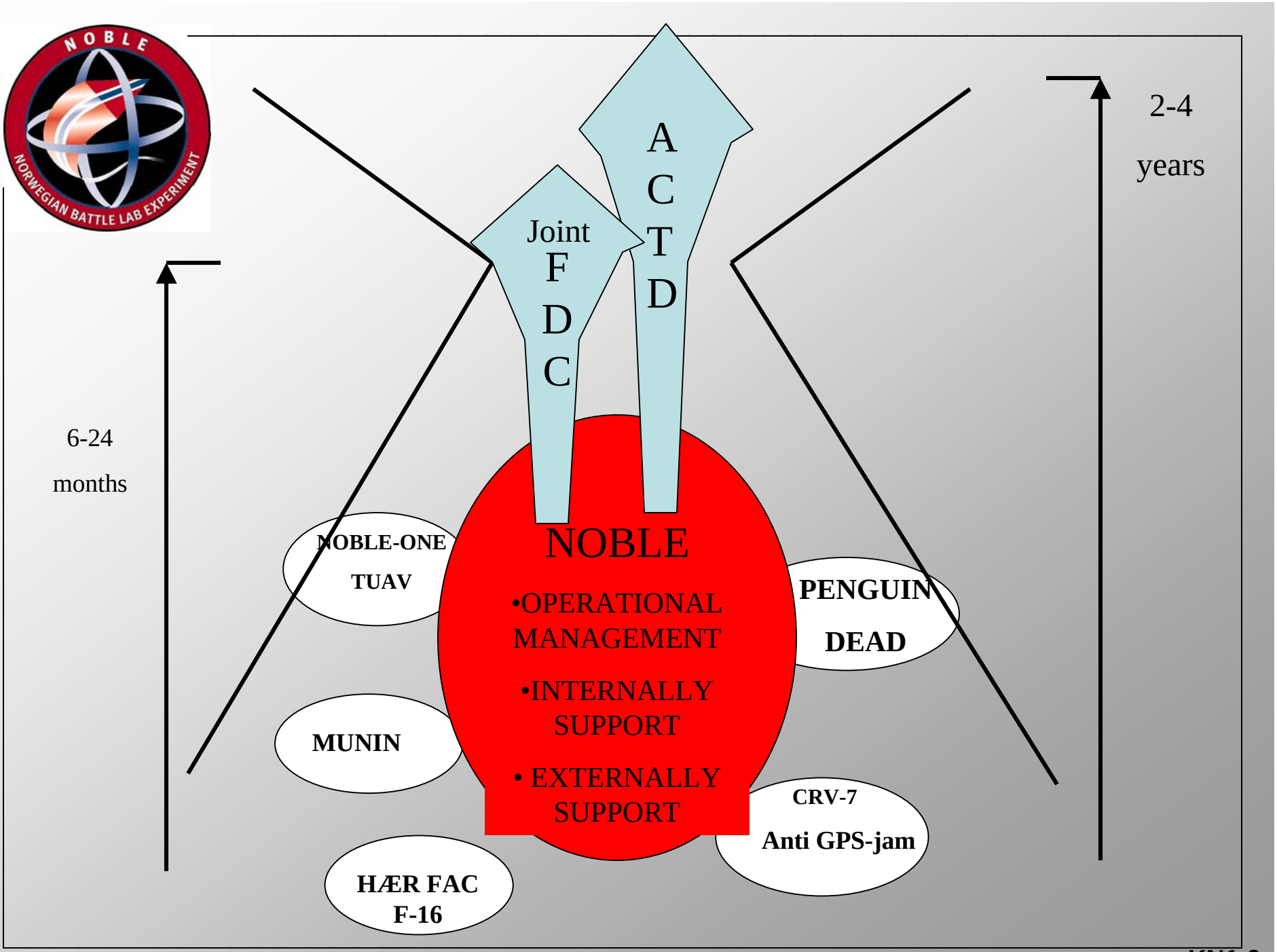
NOBLE'S PART



COMPRESSING LEVELS



CAPASITY OF ARMS DEVELOPMENT AND FLEXIBILITY


NOBLE
NORWEGIAN BATTLE LAB EXPERIMENT
Joint FDC
ACTD
2-4 years
6-24 months
NOBLE
•OPERATIONAL MANAGEMENT
•INTERNALLY SUPPORT
• EXTERNALLY SUPPORT
NOBLE-ONE TUAV
PENGUIN DEAD
MUNIN
CRV-7 Anti GPS-jam
HÆR FAC F-16

”NOBLE ONE”
TRAINING UAV

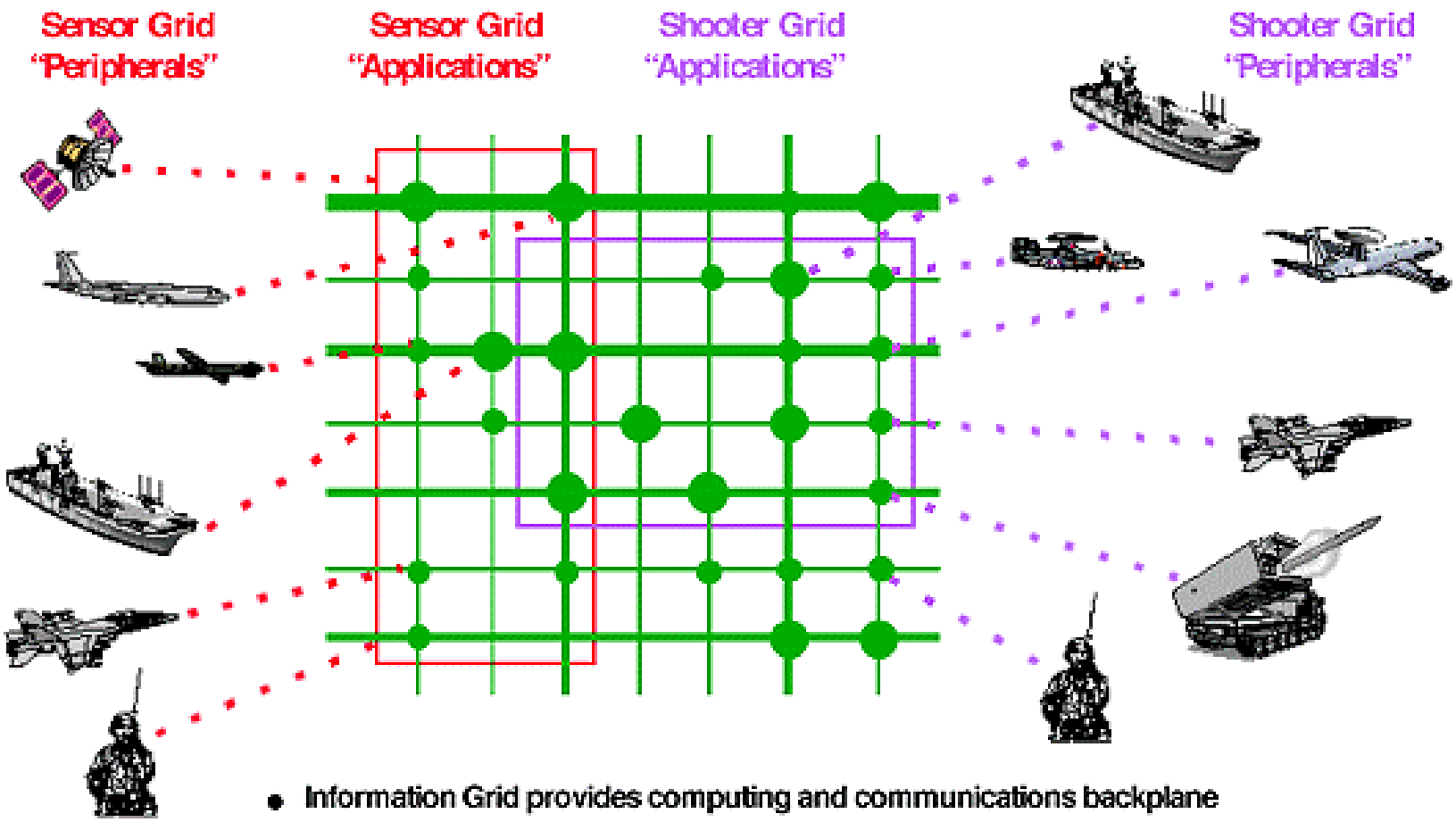
KN1-11


KN1-12

RAPID PRECISION GUIDED WEAPONS DELIVERY

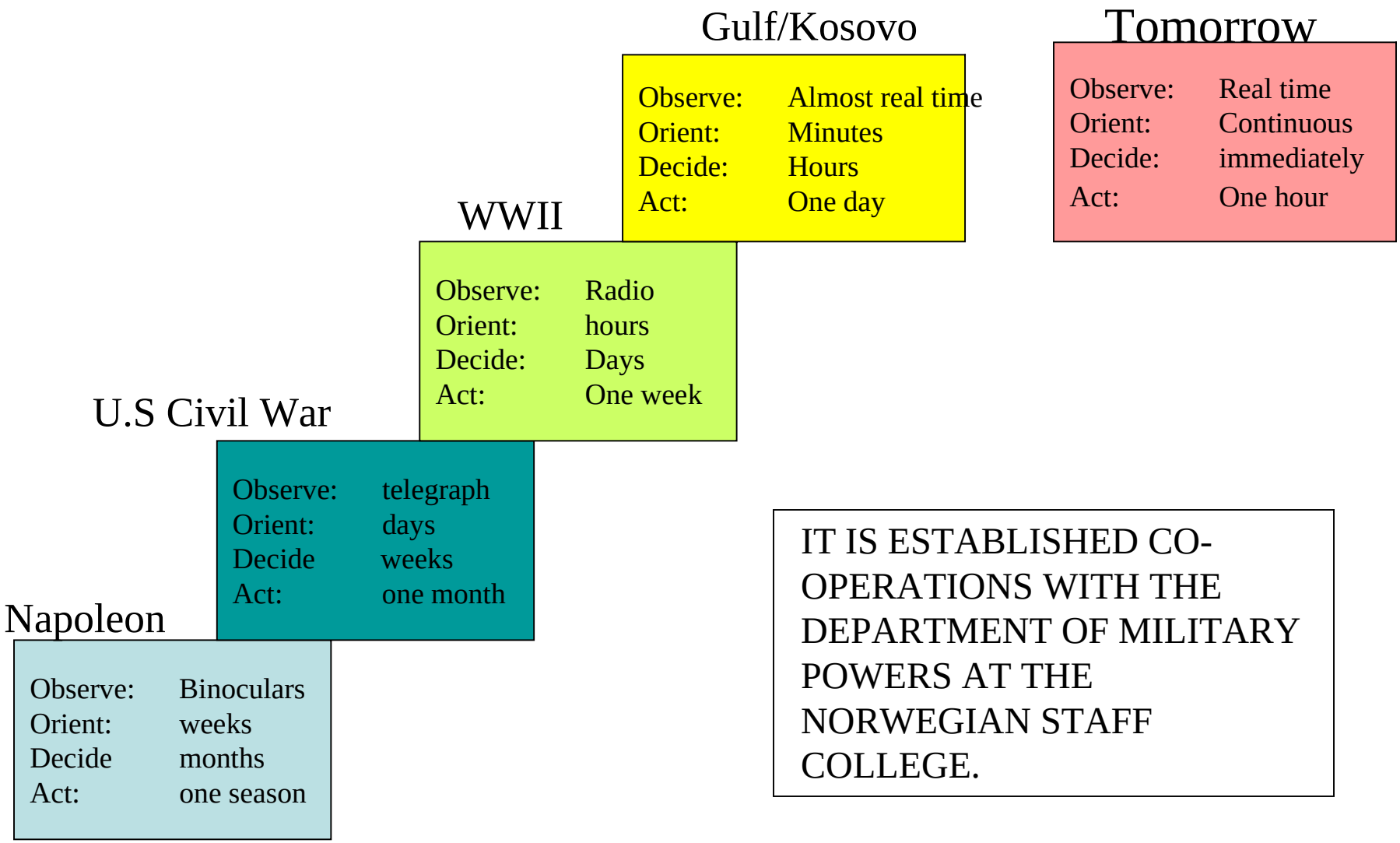
CAOC – 6DIV – Army special operations

NETWORK-CENTRIC WARFARE



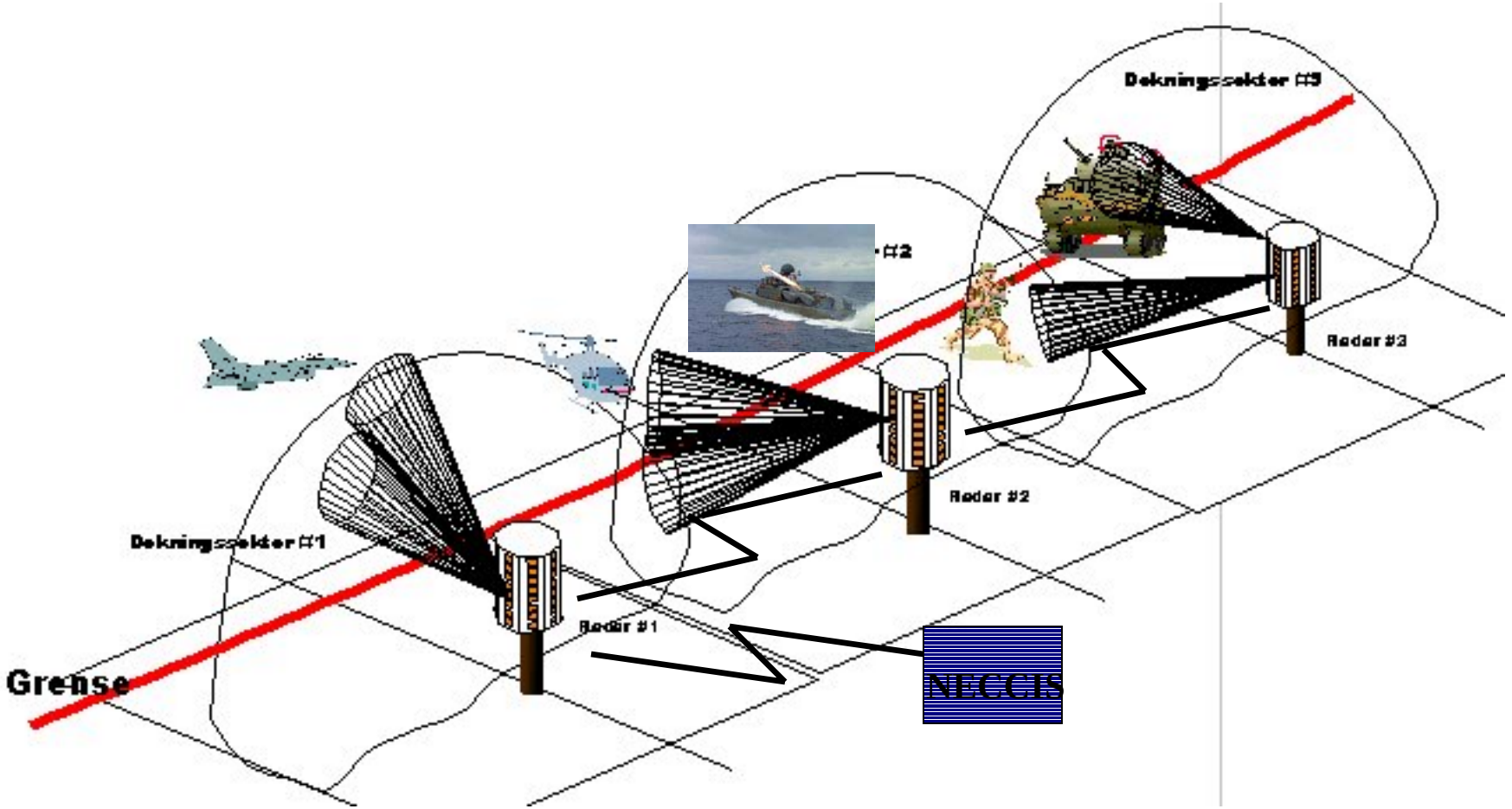
- Information Grid provides computing and communications backplane
- Applications and peripherals plug into the Information Grid

NETWORK-CENTRIC WARFARE



IT IS ESTABLISHED CO-OPERATIONS WITH THE DEPARTMENT OF MILITARY POWERS AT THE NORWEGIAN STAFF COLLEGE.

ADVANCED CONCEPT TECHNOLOGY DEMONSTRATOR



COMMON OPERATIONS DECISION SENTER

- 3D MAPS – SATELITEBASED - ORTOPHOTO
- TACTICAL - STRATEGIC PERSPECTIVE
- FLEXIBLE MILITARY / CIVILIAN MANAGEMENT OF CRISIS
- MIXED CIVILIAN & MILITARY TECHNOLOGY
- FLEXSIBILITY THROUGH CONFLICT LEVELS
- ADVANCED ”SENSOR FUSION” CAPASITY

KN1-18

END OF BRIEF

Questions?